

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-043481  
(43)Date of publication of application : 17.02.1998

(51) Int.Cl. D06F 37/28  
// D06F 49/00

(21) Application number : 08-207269

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(22) Date of filing : 06.08.1996

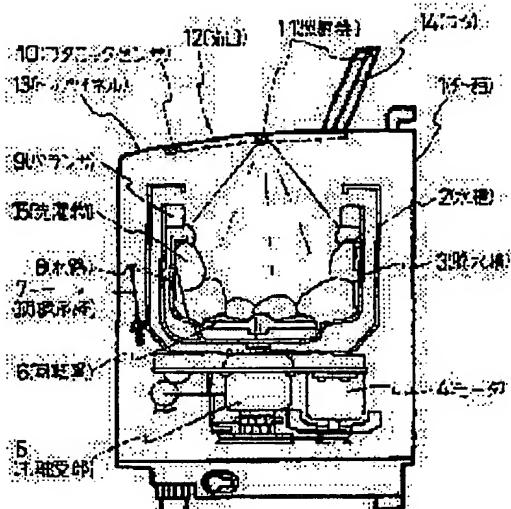
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**(54) WASHING MACHINE**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To prevent bad smell from being stuck on laundry by the propagation of unwanted bacteria even when the laundry is left in a tub by providing an irradiator for irradiating the laundry inside a spinning tub with beams having sterilizing operation when a lid close signal is outputted from a lid lock sensor for detecting whether the lid of a washing machine is opened or closed.

**SOLUTION:** When washing operation is started, respective processes for washing and rinsing are automatically progressed and laundry 15 is not taken out of a spindrying tub 3 in the state of still closing a lid 14 after a final dehydrating process is automatically finished, corresponding to the output of the lid close signal from a lid lock sensor 10, an irradiator 11 is operated through a controller. Thus, ultraviolet rays, for example, are generated from the irradiator 11 as beams having the sterilizing operation and the laundry 15 left in the spindrying tub 3 is irradiated for fixed time such as one minute, for example. Thus, even when the lid 14 is not opened and the laundry 15 is left in the spindrying tub 3 for a long time, the laundry can be prevented from bad smelling because of the propagation of unwanted bacteria inside the tub 3.



## **LEGAL STATUS**

[Date of request for examination] 28.07.2003

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

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## [Claim(s)]

[Claim 1] The washer characterized by forming the exposure machine which irradiates the beam of light which operates with the output of the free-wheel-plate close signal from the free-wheel-plate lock sensor which detects closing motion of the free wheel plate of a washer, and this free-wheel-plate lock sensor, and has a germicidal action for the washing in a dehydration tank.

[Claim 2] An exposure machine is a washer according to claim 1 characterized by emitting light in ultraviolet rays as a beam of light which has a germicidal action.

[Claim 3] An exposure machine is a washer according to claim 1 or 2 characterized by arranging in the center on the background of a free wheel plate.

[Claim 4] An exposure machine is a washer given in either of claim 1 to claims 2 characterized by making it located in the edge of opening for the charge of the washing, and arranging in a top panel.

[Claim 5] An exposure machine is a washer given in either of claim 1 to claims 4 which irradiate at the washing the beam of light which has a germicidal action after automatic termination of the last dehydration operation.

[Claim 6] An exposure machine is a washer given in either of claim 1 to claims 4 which irradiate at the washing the beam of light which has a germicidal action during dehydration operation.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a washer.

[0002]

[Description of the Prior Art] For example, in an automatic washing machine, if only a user sets up the content of wash at the time of wash initiation and throws in the washing in wash-cum-a dehydration tank, after that, feed water begins automatically, a detergent is thrown in further, it washes, each process of a rinse and dehydration advances automatically, and wash ends him. [0003] And at the dehydration process which is a final process, a free wheel plate is in the condition of having been closed until a user opens a free wheel plate in order to close the free wheel plate of a washer for security, to complete all the processes of wash with this condition and to take out the washing also after that since wash-cum-a dehydration tank and a rotary wing carry out a high-speed revolution.

[0004]

[Problem(s) to be Solved by the Invention] If a free wheel plate is opened promptly and the washing is not taken out from the inside of wash-cum-a dehydration tank after the last dehydration process termination, it will be left by the washing in the condition [ that the free wheel plate has been damp in the tub closed and sealed ], consequently saprophytic bacteria etc. breed within a tub, and a disagreeable smell may be attached to the washing.

[0005] Without this invention's canceling the inconvenience of said conventional example, opening a free wheel plate promptly after the last dehydration process termination, and taking out the washing from the inside of wash-cum-a dehydration tank, even if it leaves the washing in a tub as it is, it is in offering the washer which can prevent for the washing the disagreeable stinking thing attached a thing.

[0006]

[Means for Solving the Problem] This invention is forming the exposure machine which irradiates the beam of light which operates with the output of the free-wheel-plate close signal from the free-wheel-plate lock sensor which detects closing motion of the free wheel plate of a washer, and this free-wheel-plate lock sensor, and has [ 1st ] a germicidal action for the washing in a dehydration tank, in order to attain said object, and if a free-wheel-plate close condition is checked with the output from a free-wheel-plate lock sensor after dehydration termination, it will irradiate the beam of light which has a germicidal action from an exposure machine at the washing in a tub. Thereby, even if it leaves the washing in a tub as it is, the disagreeable stinking thing attached a thing can be prevented for the washing by propagation of saprophytic bacteria.

[0007] The washing seems not to deteriorate in it, even if it can obtain a positive germicidal action to the 2nd and a beam of light is irradiated since ultraviolet rays were made for an exposure machine to emit light as a beam of light which has a germicidal action.

[0008] An exposure machine can irradiate a beam of light uniformly by arranging in the center on the background of a free wheel plate the 3rd at the washing in a dehydration tank.

[0009] To the 4th, since an exposure machine can install an exposure machine in the location which the hand of the washing or a man moreover cannot contact easily in the location fixed by making it located in the edge of opening for the charge of the washing, and arranging on a top panel, it can also aim at protection of an exposure machine. Moreover, when irradiating during operation, since the tub is rotating even if it arranges an exposure machine in said location, a beam of light can be irradiated uniformly at the washing in a tub.

[0010] Since a beam of light is irradiated only when a free wheel plate is not opened after dehydration operation termination by the 5th but it is left as it was by the washing in a tub in it, since an exposure machine irradiates at the washing the beam of light which has a germicidal action after automatic termination of the last dehydration operation, an exposure machine does not operate vainly.

[0011] The stinking thing disagreeable for the washing when it is left as it is, without once taking out after an open beam and the washing for the case where it is left in a bucket etc. as it is, without drying after taking out after dehydration operation termination and the washing from a tub, since the beam of light with which an exposure machine has a germicidal action during dehydration operation in the 6th is irradiated at the washing, and a free wheel plate from a tub attached a thing can be prevented.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail about a drawing. It is the vertical section side elevation showing the 1st operation gestalt of the washer of the washer of this invention, and when explained from the whole washer configuration, drawing 1 \*\*\*\*(ed) the cistern 2 with the vibration control soldier 7 in the tank 1. in this cistern 2, it was arranged for the dehydration tank 3 which formed the rotary wing 6 at the pars basilaris ossis occipitalis, enabling a free revolution, and arranged a motor 4 and the main bearing section 5 under the cistern 2.

[0013] The balancer which prepared eight in the channel among drawing and prepared 9 in the upper limb of a dehydration tank 3 is shown.

[0014] The free-wheel-plate lock sensor 10 which detects the free-wheel-plate close for the opening 12 for the charge of the washing which formed the top panel 13 in installation and this top panel 13 on the edge of a bonnet and opening 12 free [ closing motion with a free wheel plate 14 ] is attached in the upper part of a tank 1.

[0015] Furthermore, it operates with the free-wheel-plate close signal from said free-wheel-plate lock sensor 10, and the

exposure machine 11 which irradiates the beam of light which has a germicidal action for the washing in a dehydration tank 3 is formed in the center on the background of said free wheel plate 14.

[0016] The exposure machine 11 uses ultraviolet rays as the ultraviolet-rays light which emits light as a beam of light which has a germicidal action.

[0017] Next, exposure actuation of the beam of light which has a germicidal action about the flow chart of drawing 3 is explained. After wash operation begins, washing, and each process of a rinse advancing automatically and completing the last dehydration process automatically, [Step (b)]. In the condition that the washing is not picked out from a dehydration tank 3 in the condition [ that a free wheel plate 14 is closed ] The free-wheel-plate lock sensor 10 detects this, and a free-wheel-plate close signal outputs from here. [Step (b)], the washing 15 which the exposure machine 11 operates by this, and ultraviolet rays are emitted as a beam of light which has a germicidal action from this exposure machine 11, and is left in the dehydration tank 3 — fixed time amount, for example, [step (Ha) (d)] irradiated for 1 minute

[0018] Even if a free wheel plate 14 is not opened as it is but long duration neglect of the washing 15 is carried out into the dehydration layer 3 also after that by this, saprophytic bacteria do not breed within a tub and a disagreeable smell is not attached to the washing. In this case, since the exposure machine 11 is located in the center on the background of a free wheel plate 14, it can apply ultraviolet rays to the washing 15 in a tub uniformly.

[0019] In addition, since when it will be in the condition that the free wheel plate 14 is locked after termination of the last dehydration process takes out the washing 15 from the inside of [step (b) (b)] and a dehydration tank 3, it is judged as that to which the user opened the free wheel plate 14, and the exposure of ultraviolet rays does not carry out [step (e)].

[0020] It is also possible for it not to be limited to said operation gestalt about the exposure stage of ultraviolet rays, and to consider as under dehydration operation. In this case, since ultraviolet rays are already irradiated by the washing 15 even if a user opens a free wheel plate 14 promptly after termination of a dehydration process After dehydration operation termination, when it was left in the bucket etc. as it is, without drying after taking out the washing 15 from a tub, or when a free wheel plate 14 is once left as it was, without picking out the washing 15 from a dehydration tank 3 after an open beam, the disagreeable stinking thing attached a thing can be prevented for the washing 15.

[0021] Moreover, it is not limited to said 1st operation gestalt about the installation of the exposure machine 11, and can also prepare in the edge of the opening 12 formed in the top panel 13 as shown in drawing 2 as the 2nd operation gestalt.

[0022] In this case, since the exposure machine 11 can be installed in the location which the hand of the washing or a man moreover cannot contact easily in the fixed location, protection of the exposure machine 11 can also be aimed at. Moreover, when irradiating during operation, since the dehydration tank 3 is rotating even if it arranges the exposure machine 11 in said location, a beam of light can be irradiated uniformly and it is convenient for the washing 15 in a tub.

[0023] If the exposure machine 11 is attached enabling still freer rotation, ultraviolet rays can be irradiated even if the washing in a tub is in which location.

[0024]

[Effect of the Invention] It is forming the exposure machine which irradiates the beam of light which operates with the output of the free-wheel-plate close signal from the free-wheel-plate lock sensor by which the washer of this invention detects [ 1st ] that closing motion of the free wheel plate of a washer stated above, and this free-wheel-plate lock sensor, and has a germicidal action for the washing in a dehydration tank, and if a free-wheel-plate close condition is checked with the output from a free-wheel-plate lock sensor after dehydration termination, the beam of light which has a germicidal action from an exposure machine will irradiate at the washing in a tub. Thereby, even if it leaves the washing in a tub as it is, the disagreeable stinking thing attached a thing can be prevented for the washing by propagation of saprophytic bacteria.

[0025] The washing seems not to deteriorate in it, even if it can obtain trustworthy Mr. sterilization Hidari to the 2nd and a beam of light is irradiated since ultraviolet rays were made for an exposure machine to emit light as a beam of light which has a germicidal action.

[0026] An exposure machine can irradiate a beam of light uniformly by arranging in the center on the background of a free wheel plate the 3rd at the washing in a dehydration tank.

[0027] To the 4th, since an exposure machine can install an exposure machine in the location which the hand of the washing or a man moreover cannot contact easily in the location fixed by making it located in the edge of opening for the charge of the washing, and arranging on a top panel, it can also aim at protection of an exposure machine. Moreover, when irradiating during operation, since the tub is rotating even if it arranges an exposure machine in said location, a beam of light can be irradiated uniformly at the washing in a tub.

[0028] Since a beam of light is irradiated only when a free wheel plate is not opened after dehydration operation termination by the 5th but it is left as it was by the washing in a tub in it, since an exposure machine irradiates at the washing the beam of light which has a germicidal action after automatic termination of the last dehydration operation, an exposure machine does not operate vainly.

[0029] The stinking thing disagreeable for the washing when it is left as it is, without once taking out after an open beam and the washing for the case where it is left in a bucket etc. as it is, without drying after taking out after dehydration operation termination and the washing from a tub, since the beam of light with which an exposure machine has a germicidal action during dehydration operation in the 6th is irradiated at the washing, and a free wheel plate from a tub attached a thing can be prevented.

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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to a washer.

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PRIOR ART

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[Description of the Prior Art] For example, in an automatic washing machine, if only a user sets up the content of wash at the time of wash initiation and throws in the washing in wash-cum-a dehydration tank, after that, feed water begins automatically, a detergent is thrown in further, it washes, each process of a rinse and dehydration advances automatically, and wash ends him. [0003] And at the dehydration process which is a final process, a free wheel plate is in the condition of having been closed until a user opens a free wheel plate in order to close the free wheel plate of a washer for security, to complete all the processes of wash with this condition and to take out the washing also after that since wash-cum-a dehydration tank and a rotary wing carry out a high-speed revolution.

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EFFECT OF THE INVENTION

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[Effect of the Invention] It is forming the exposure machine which irradiates the beam of light which operates with the output of the free-wheel-plate close signal from the free-wheel-plate lock sensor by which the washer of this invention detects [ 1st ] that closing motion of the free wheel plate of a washer stated above, and this free-wheel-plate lock sensor, and has a germicidal action for the washing in a dehydration tank, and if a free-wheel-plate close condition is checked with the output from a free-wheel-plate lock sensor after dehydration termination, the beam of light which has a germicidal action from an exposure machine will irradiate at the washing in a tub. Thereby, even if it leaves the washing in a tub as it is, the disagreeable stinking thing attached a thing can be prevented for the washing by propagation of saprophytic bacteria.

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[0026] An exposure machine can irradiate a beam of light uniformly by arranging in the center on the background of a free wheel plate the 3rd at the washing in a dehydration tank.

[0027] To the 4th, since an exposure machine can install an exposure machine in the location which the hand of the washing or a man moreover cannot contact easily in the location fixed by making it located in the edge of opening for the charge of the washing, and arranging on a top panel, it can also aim at protection of an exposure machine. Moreover, when irradiating during operation, since the tub is rotating even if it arranges an exposure machine in said location, a beam of light can be irradiated uniformly at the washing in a tub.

[0028] Since a beam of light is irradiated only when a free wheel plate is not opened after dehydration operation termination by the 5th but it is left as it was by the washing in a tub in it, since an exposure machine irradiates at the washing the beam of light which has a germicidal action after automatic termination of the last dehydration operation, an exposure machine does not operate vainly.

[0029] The stinking thing disagreeable for the washing when it is left as it is, without once taking out after an open beam and the washing for the case where it is left in a bucket etc. as it is, without drying after taking out after dehydration operation termination and the washing from a tub, since the beam of light with which an exposure machine has a germicidal action during dehydration operation in the 6th is irradiated at the washing, and a free wheel plate from a tub attached a thing can be prevented.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] If a free wheel plate is opened promptly and the washing is not taken out from the inside of wash-cum-a dehydration tank after the last dehydration process termination, it will be left by the washing in the condition [ that the free wheel plate has been damp in the tub closed and sealed ], consequently saprophytic bacteria etc. breed within a tub, and a disagreeable smell may be attached to the washing.

[0005] Without this invention's canceling the inconvenience of said conventional example, opening a free wheel plate promptly after the last dehydration process termination, and taking out the washing from the inside of wash-cum-a dehydration tank, even if it leaves the washing in a tub as it is, it is in offering the washer which can prevent for the washing the disagreeable stinking thing attached a thing.

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## MEANS

[Means for Solving the Problem] This invention is forming the exposure machine which irradiates the beam of light which operates with the output of the free-wheel-plate close signal from the free-wheel-plate lock sensor which detects closing motion of the free wheel plate of a washer, and this free-wheel-plate lock sensor, and has [ 1st ] a germicidal action for the washing in a dehydration tank, in order to attain said object, and if a free-wheel-plate close condition is checked with the output from a free-wheel-plate lock sensor after dehydration termination, it will irradiate the beam of light which has a germicidal action from an exposure machine at the washing in a tub. Thereby, even if it leaves the washing in a tub as it is, the disagreeable stinking thing attached a thing can be prevented for the washing by propagation of saprophytic bacteria.

[0007] The washing seems not to deteriorate in it, even if it can obtain a positive germicidal action to the 2nd and a beam of light is irradiated since ultraviolet rays were made for an exposure machine to emit light as a beam of light which has a germicidal action.

[0008] An exposure machine can irradiate a beam of light uniformly by arranging in the center on the background of a free wheel plate the 3rd at the washing in a dehydration tank.

[0009] To the 4th, since an exposure machine can install an exposure machine in the location which the hand of the washing or a man moreover cannot contact easily in the location fixed by making it located in the edge of opening for the charge of the washing, and arranging on a top panel, it can also aim at protection of an exposure machine. Moreover, when irradiating during operation, since the tub is rotating even if it arranges an exposure machine in said location, a beam of light can be irradiated uniformly at the washing in a tub.

[0010] Since a beam of light is irradiated only when a free wheel plate is not opened after dehydration operation termination by the 5th but it is left as it was by the washing in a tub in it, since an exposure machine irradiates at the washing the beam of light which has a germicidal action after automatic termination of the last dehydration operation, an exposure machine does not operate vainly.

[0011] The stinking thing disagreeable for the washing when it is left as it is, without once taking out after an open beam and the washing for the case where it is left in a bucket etc. as it is, without drying after taking out after dehydration operation termination and the washing from a tub, since the beam of light with which an exposure machine has a germicidal action during dehydration operation in the 6th is irradiated at the washing, and a free wheel plate from a tub attached a thing can be prevented.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail about a drawing. It is the vertical section side elevation showing the 1st operation gestalt of the washer of the washer of this invention, and when explained from the whole washer configuration, drawing 1 \*\*\*\*(ed) the cistern 2 with the vibration control soldier 7 in the tank 1, in this cistern 2, it was arranged for the dehydration tank 3 which formed the rotary wing 6 at the pars basilaris ossis occipitalis, enabling a free revolution, and arranged a motor 4 and the main bearing section 5 under the cistern 2.

[0013] The balancer which prepared eight in the channel among drawing and prepared 9 in the upper limb of a dehydration tank 3 is shown.

[0014] The free-wheel-plate lock sensor 10 which detects the free-wheel-plate close for the opening 12 for the charge of the washing which formed the top panel 13 in installation and this top panel 13 on the edge of a bonnet and opening 12 free [ closing motion with a free wheel plate 14 ] is attached in the upper part of a tank 1.

[0015] Furthermore, it operates with the free-wheel-plate close signal from said free-wheel-plate lock sensor 10, and the exposure machine 11 which irradiates the beam of light which has a germicidal action for the washing in a dehydration tank 3 is formed in the center on the background of said free wheel plate 14.

[0016] The exposure machine 11 uses ultraviolet rays as the ultraviolet-rays light which emits light as a beam of light which has a germicidal action.

[0017] Next, exposure actuation of the beam of light which has a germicidal action about the flow chart of drawing 3 is explained. After wash operation begins, washing, and each process of a rinse advancing automatically and completing the last dehydration process automatically. [Step (b)], In the condition that the washing is not picked out from a dehydration tank 3 in the condition [ that a free wheel plate 14 is closed ] The free-wheel-plate lock sensor 10 detects this, and a free-wheel-plate close signal outputs from here. [Step (b)], the washing 15 which the exposure machine 11 operates by this, and ultraviolet rays are emitted as a beam of light which has a germicidal action from this exposure machine 11, and is left in the dehydration tank 3 — fixed time amount, for example, [step (Ha) (d)] irradiated for 1 minute

[0018] Even if a free wheel plate 14 is not opened as it is but long duration neglect of the washing 15 is carried out into the dehydration layer 3 also after that by this, saprophytic bacteria do not breed within a tub and a disagreeable smell is not attached to the washing. In this case, since the exposure machine 11 is located in the center on the background of a free wheel plate 14, it can apply ultraviolet rays to the washing 15 in a tub uniformly.

[0019] In addition, since when it will be in the condition that the free wheel plate 14 is locked after termination of the last dehydration process takes out the washing 15 from the inside of [step (b) (b)] and a dehydration tank 3, it is judged as that to which the user opened the free wheel plate 14, and the exposure of ultraviolet rays does not carry out [step (e)].

[0020] It is also possible for it not to be limited to said operation gestalt about the exposure stage of ultraviolet rays, and to consider as under dehydration operation. In this case, since ultraviolet rays are already irradiated by the washing 15 even if a user opens a free wheel plate 14 promptly after termination of a dehydration process After dehydration operation termination,

when it was left in the bucket etc. as it is, without drying after taking out the washing 15 from a tub, or when a free wheel plate 14 is once left as it was, without picking out the washing 15 from a dehydration tack 3 after an open beam, the disagreeable stinking thing attached a thing can be prevented for the washing 15.

[0021] Moreover, it is not limited to said 1st operation gestalt about the installation of the exposure machine 11, and can also prepare in the edge of the opening 12 formed in the top panel 13 as shown in drawing 2 as the 2nd operation gestalt.

[0022] In this case, since the exposure machine 11 can be installed in the location which the hand of the washing or a man moreover cannot contact easily in the fixed location, protection of the exposure machine 11 can also be aimed at. Moreover, when irradiating during operation, since the dehydration tack 3 is rotating even if it arranges the exposure machine 11 in said location, a beam of light can be irradiated uniformly and it is convenient for the washing 15 in a tub.

[0023] If the exposure machine 11 is attached enabling still freer rotation, ultraviolet rays can be irradiated even if the washing in a tub is in which location.

[0024]

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**DESCRIPTION OF DRAWINGS**

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## [Brief Description of the Drawings]

[Drawing 1] It is the vertical section side elevation showing the 1st operation gestalt of the washer of this invention.

[Drawing 2] It is the vertical section side elevation showing the 2nd operation gestalt of the washer of this invention.

[Drawing 3] It is the flow chart which shows actuation of the beam-of-light exposure in the washer of this invention.

## [Description of Notations]

- 1 — Tank
- 2 — Cistern
- 3 — Dehydration tank
- 4 — Motor
- 5 — Main bearing section
- 6 — Rotary wing
- 7 — Vibration control soldier
- 8 — Channel
- 9 — Balancer
- 10 — Free-wheel-plate lock sensor
- 11 — Exposure machine
- 12 — Opening
- 13 — Top panel
- 14 — Free wheel plate
- 15 — Washing

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[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-43481

(43) 公開日 平成10年(1998)2月17日

(51) Int.Cl.<sup>6</sup>  
D 0 6 F 37/28  
// D 0 6 F 49/00

識別記号

序内整理番号

F I  
D 0 6 F 37/28  
49/00

技術表示箇所

Z

審査請求 未請求 請求項の数6 O.L (全4頁)

(21) 出願番号 特願平8-207269

(22) 出願日 平成8年(1996)8月6日

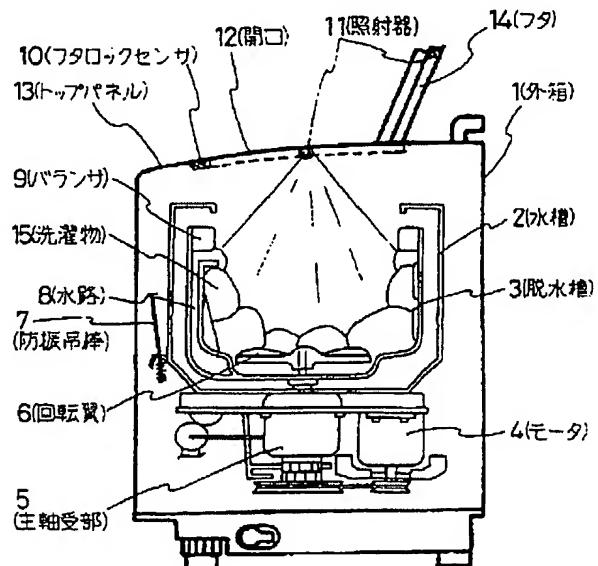
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(54) 【発明の名称】 洗濯機

(57) 【要約】

【課題】 最終の脱水工程終了後、直ちにフタを開けて洗濯兼脱水槽内から洗濯物を取り出さずにそのまま洗濯物を槽内に放置しても、洗濯物にいやな臭いのつくことを防止できる洗濯機を得る。

【解決手段】 洗濯機のフタの開閉を検知するフタロックセンサ10と、該フタロックセンサ10からのフタ閉信号の出力で作動し脱水槽3内の洗濯物15に殺菌作用を有する光線を照射する照射器11を設ける。



## 【特許請求の範囲】

【請求項 1】 洗濯機のフタの開閉を検知するフタロックセンサと、該フタロックセンサからのフタ閉信号の出力で作動し脱水槽内の洗濯物に殺菌作用を有する光線を照射する照射器を設けたことを特徴とする洗濯機。

【請求項 2】 照射器は殺菌作用を有する光線として紫外線を発光することを特徴とする請求項 1 記載の洗濯機。

【請求項 3】 照射器はフタの裏側の中央に配設することを特徴とする請求項 1 または請求項 2 に記載の洗濯機。

【請求項 4】 照射器は洗濯物の投入用の開口の縁に位置させてトップパネルに配設することを特徴とする請求項 1 から請求項 2 のいずれかに記載の洗濯機。

【請求項 5】 照射器は最終の脱水運転の自動終了後に殺菌作用を有する光線を洗濯物に照射する請求項 1 から請求項 4 のいずれかに記載の洗濯機。

【請求項 6】 照射器は脱水運転中に殺菌作用を有する光線を洗濯物に照射する請求項 1 から請求項 4 のいずれかに記載の洗濯機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、洗濯機に関するものである。

## 【0002】

【従来の技術】 例え全自動洗濯機では、使用者は洗濯開始時に洗濯内容を設定して洗濯兼脱水槽内に洗濯物を投入しさえすれば、その後は自動的に給水が開始し、さらに洗剤が投入され、洗い、すすぎ、脱水の各工程が自動的に進行して洗濯が終了する。

【0003】 そして、最終工程である脱水工程では洗濯兼脱水槽と回転翼とが高速回転することから安全確保のために洗濯機のフタは閉じられており、この状態のまま洗濯の全工程が終了し、その後も洗濯物を取り出すために使用者がフタを開けるまではフタは閉じられた状態にある。

## 【0004】

【発明が解決しようとする課題】 最終の脱水工程終了後、直ちにフタを開けて洗濯兼脱水槽内から洗濯物を取り出さないと、フタが閉じて密閉された槽内に漏れたままの状態で洗濯物が放置されることになり、その結果、槽内で雑菌などが繁殖して洗濯物にいやな臭いがつくことがある。

【0005】 本発明は前記従来例の不都合を解消し、最終の脱水工程終了後、直ちにフタを開けて洗濯兼脱水槽内から洗濯物を取り出さずに、そのまま洗濯物を槽内に放置しても洗濯物にいやな臭いのつくことを防止できる洗濯機を提供することにある。

## 【0006】

【課題を解決するための手段】 本発明は前記目的を達成

するため、第 1 に、洗濯機のフタの開閉を検知するフタロックセンサと、該フタロックセンサからのフタ閉信号の出力で作動し脱水槽内の洗濯物に殺菌作用を有する光線を照射する照射器を設けることで、脱水終了後にフタロックセンサからの出力によりフタ閉の状態が確認されれば、照射器から殺菌作用を有する光線を槽内の洗濯物に照射する。これにより、このまま洗濯物を槽内に放置しても雑菌の繁殖によって洗濯物にいやな臭いのつくことを防止できる。

【0007】 第 2 に、照射器は殺菌作用を有する光線として紫外線を発光するようにしたから、確実な殺菌作用を得ることができ、また、光線が照射されても洗濯物が変質するようなことはない。

【0008】 第 3 に、照射器はフタの裏側の中央に配設することにより、脱水槽内の洗濯物に万遍なく光線を照射できる。

【0009】 第 4 に、照射器は洗濯物の投入用の開口の縁に位置させてトップパネルに配設することにより、固定した場所でしかも洗濯物や人の手が接触しにくい場所に照射器を設置できるから、照射器の保護も図れる。また、運転中に照射する場合は、前記位置に照射器を配置しても槽が回転しているから槽内の洗濯物に万遍なく光線を照射できる。

【0010】 第 5 に、照射器は最終の脱水運転の自動終了後に殺菌作用を有する光線を洗濯物に照射するから、脱水運転終了後にフタが開かれず槽内に洗濯物がそのまま放置された場合にのみ光線が照射されるから、照射器が無駄に動作することがない。

【0011】 第 6 に、照射器は脱水運転中に殺菌作用を有する光線を洗濯物に照射するから、脱水運転終了後、洗濯物を槽から取り出した後に干さずにそのままバケツ内などに放置した場合や、フタを一旦開けた後、洗濯物を槽から取り出さずにそのまま放置した場合などにも洗濯物にいやな臭いのつくことを防止できる。

## 【0012】

【発明の実施の形態】 以下、図面について本発明の実施の形態を詳細に説明する。図 1 は本発明の洗濯機の洗濯機の第 1 実施形態を示す縦断側面図で、洗濯機の全体構成から説明すると、外箱 1 内に水槽 2 を防振吊棒 7 で吊り、該水槽 2 内に底部に回転翼 6 を設けた脱水槽 3 を回転自在に配設し、水槽 2 の下方にモータ 4 と主軸受部 5 を配設した。

【0013】 図中、8 は水路、9 は脱水槽 3 の上縁に設けたバランサを示す。

【0014】 外箱 1 の上部にトップパネル 13 を取り付け、該トップパネル 13 に形成した洗濯物の投入用の開口 12 をフタ 14 で開閉自在に覆い、開口 12 の縁にフタ閉を検知するフタロックセンサ 10 を取り付ける。

【0015】 さらに、前記フタロックセンサ 10 からのフタ閉信号により作動し、脱水槽 3 内の洗濯物に殺菌作

用を有する光線を照射する照射器11を前記フタ14の裏側の中央に設ける。

【0016】照射器11は例えは殺菌作用を有する光線として紫外線を発光する紫外線ライトとする。

【0017】次に図3のフローチャートについて殺菌作用を有する光線の照射動作について説明する。洗濯運転が開始し、洗い、すすぎの各工程が自動的に進行し、最終の脱水工程が自動的に終了した後【ステップ

(イ)】、フタ14が閉じられたままの状態で洗濯物が脱水槽3から取り出されていない状態では、フタロックセンサ10がこれを検知してここからフタ閉信号が出力して【ステップ(ロ)】、これにより照射器11が作動し、該照射器11から殺菌作用を有する光線として例えは紫外線が発せられ、脱水槽3内に放置されている洗濯物15に一定時間、例え1分間照射される【ステップ(ハ)(ニ)】。

【0018】これにより、その後もそのままフタ14が開かれず、洗濯物15が脱水槽3内に長時間放置されても、槽内で雑菌が繁殖することなく、洗濯物にいやな臭いがつくこともない。この場合、照射器11はフタ14の裏側の中央に位置しているから、槽内の洗濯物15に万遍なく紫外線を当てることができる。

【0019】なお、最終の脱水工程の終了後にフタ14がロックされている状態にない場合は【ステップ(イ)(ロ)】、脱水槽3内から洗濯物15を取りだすために使用者がフタ14を開いたものと判断して紫外線の照射は行わない【ステップ(ホ)】。

【0020】紫外線の照射時期については前記実施形態に限定されるものではなく、脱水運転中とすることも可能である。この場合は、脱水工程の終了後に使用者が直ちにフタ14を開いても既に洗濯物15に紫外線が照射されているから、脱水運転終了後、洗濯物15を槽から取り出した後に干さずにそのままパケット内などに放置した場合や、フタ14を一旦開けた後、洗濯物15を脱水槽3から取り出さずにそのまま放置した場合などにも洗濯物15にいやな臭いのつくことを防止できる。

【0021】また、照射器11の設置場所についても前記第1実施形態に限定されるものではなく、第2実施形態として図2に示すようにトップパネル13に形成した開口12の縁に設けることもできる。

【0022】この場合は、固定した場所でしかも洗濯物や人の手が接触しにくい場所に照射器11を設置できるから、照射器11の保護も図れる。また、運転中に照射する場合は、前記位置に照射器11を配置しても脱水槽3が回転しているから槽内の洗濯物15に万遍なく光線を照射でき、支障はない。

【0023】さらに照射器11を回動自在に取り付ければ、槽内の洗濯物がどの位置にあっても紫外線を照射できる。

【0024】

【発明の効果】以上述べたように本発明の洗濯機は、第1に、洗濯機のフタの開閉を検知するフタロックセンサと、該フタロックセンサからのフタ閉信号の出力で作動し脱水槽内の洗濯物に殺菌作用を有する光線を照射する照射器を設けることで、脱水終了後にフタロックセンサからの出力によりフタ閉の状態が確認されれば、照射器から殺菌作用を有する光線を槽内の洗濯物に照射する。これにより、このまま洗濯物を槽内に放置しても雑菌の繁殖によって洗濯物にいやな臭いのつくことを防止できる。

【0025】第2に、照射器は殺菌作用を有する光線として紫外線を発光するようにしたから、確実な殺菌左様を得ることができ、また、光線が照射されても洗濯物が変質するようなことはない。

【0026】第3に、照射器はフタの裏側の中央に配設することにより、脱水槽内の洗濯物に万遍なく光線を照射できる。

【0027】第4に、照射器は洗濯物の投入用の開口の縁に位置させてトップパネルに配設することにより、固定した場所でしかも洗濯物や人の手が接触しにくい場所に照射器を設置できるから、照射器の保護も図れる。また、運転中に照射する場合は、前記位置に照射器を配置しても槽が回転しているから槽内の洗濯物に万遍なく光線を照射できる。

【0028】第5に、照射器は最終の脱水運転の自動終了後に殺菌作用を有する光線を洗濯物に照射するから、脱水運転終了後にフタが開かれず槽内に洗濯物がそのまま放置された場合にのみ光線が照射されるから、照射器が無駄に動作することがない。

【0029】第6に、照射器は脱水運転中に殺菌作用を有する光線を洗濯物に照射するから、脱水運転終了後、洗濯物を槽から取り出した後に干さずにそのままパケット内などに放置した場合や、フタを一旦開けた後、洗濯物を槽から取り出さずにそのまま放置した場合などにも洗濯物にいやな臭いのつくことを防止できるものである。

#### 【図面の簡単な説明】

【図1】 本発明の洗濯機の第1実施形態を示す縦断側面図である。

【図2】 本発明の洗濯機の第2実施形態を示す縦断側面図である。

【図3】 本発明の洗濯機における光線照射の動作を示すフローチャートである。

#### 【符号の説明】

- 1 … 外箱
- 2 … 水槽
- 3 … 脱水槽
- 4 … モータ
- 5 … 主軸受部
- 6 … 回転翼

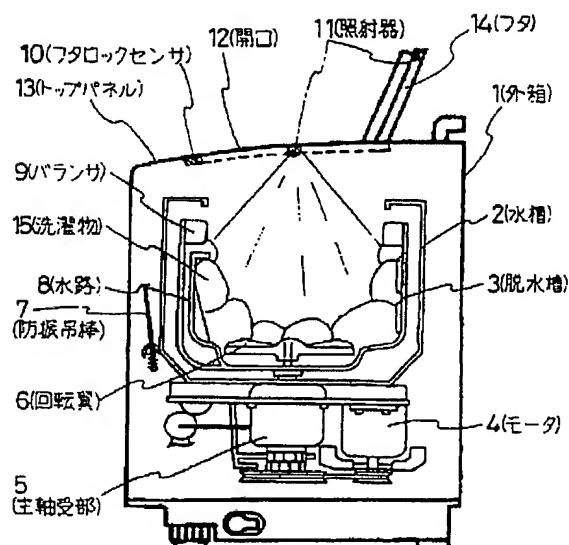
5

- 7 …防振吊棒  
8 …水路  
9 …バランサ  
10 …フタロックセンサ  
11 …照射器

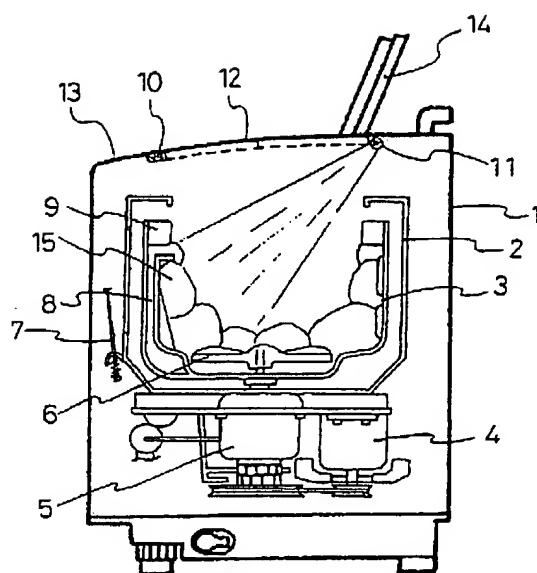
6

- 12 …開口  
13 …トップパネル  
14 …フタ  
15 …洗濯物

【図 1】



【図 2】



【図 3】

